Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICHARD G. CASEY
and HIROYASU TAKAHASHI

Appeal No. 1998-0629
Application 08/234,525[1]

ON BRIEF

Before JERRY SMITH, BARRETT, and LALL, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

[1] Application for patent filed April 28, 1994, entitled "Speed And Recognition Enhancement For OCR Using Normalized Height/Width Position."

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-43.

We reverse.

BACKGROUND

The disclosed invention is directed to a method and system for optical character recognition by normalizing attributes such as character height, character width, and character position relative to a baseline reference using a standard attribute value determined from the characters themselves. The standard attribute value may be determined from a frequency distribution of a set of the character attribute values.

Claim 16 is reproduced below.

> 16. An automated optical character recognition method for use on a programmable digital processing device, comprising the steps of:
>
> selecting from an array of characters a sequence of characters to be recognized;
>
> selecting an attribute of the members of said sequence of characters;
>
> calculating for said sequence of characters a set of quantized attribute values corresponding to said selected attribute of the members of said sequence of characters;
>
> determining from said set of attribute values a selected value to be used as an attribute value standard;

generating for said sequence of characters a set of normalized attribute values using said set of attribute values and said attribute value standard; and

recognizing said sequence of characters using said set of normalized attribute values.

The Examiner relies on the following prior art:

Wilber et al. (Wilber) 4,897,880 January 30, 1990

Claims 16 and 37 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Wilber.

Claims 1-15, 17-36, and 38-43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilber.[2]

We refer to the first Official Action (Paper No. 2), the second Official Action (Paper No. 5), the Final Rejection

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[2] In the second Official Action (Paper No. 5), the Examiner changed the basis for the rejection of certain claims from § 102(b) to § 103 over Wilber. The Examiner also referred to Kelly et al., U.S. Patent 5,060,290, and Bruce et al., U.S. Patent 5,396,566, as evidence of obviousness (Paper No. 5, p. 4). However, Kelly and Bruce have not been made part of the rejection and are not considered. See In re Hoch, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n.3 (CCPA 1970) ("Where a reference is relied on to support a rejection, whether or not in a 'minor capacity,' there would appear to be no excuse for not positively including the reference in the statement of the rejection."). Accord Manual of Patent Examining Procedure (MPEP) § 706.02(j) (7th ed., Rev. 1, Feb. 2000); Ex parte Movva, 31 USPQ2d 1027, 1028 n.1 (Bd. Pat. App. & Int. 1993); Ex parte Raske, 28 USPQ2d 1304, 1304-05 (Bd. Pat. App. & Int. 1993); Ex parte Hiyamizu, 10 USPQ2d 1393, 1394 (Bd. Pat. App. & Int. 1988).

(Paper No. 8) (pages referred to as "FR__"), and the Examiner's Answer (Paper No. 15) (pages referred to as "EA__") for a statement of the Examiner's position[3] and to the Supplemental Appeal Brief (Paper No. 14) (pages referred to as "Br__") for a statement of Appellants' arguments thereagainst.

[3] Although the Examiner's Answer refers only to Paper No. 2 for a statement of the reasons for the rejection, it is necessary to refer to Paper No. 5 for a statement of the obviousness rejection.

OPINION

The Examiner contends that Appellants seek to obtain protection for an "old and well-known scheme [for character recognition] . . . by presenting a number of extraordinarily detailed recitations of old and obvious elements, and by presenting a multiplicity of names for the same basic elements of the system" (EA3). However, it is clear to us from a thorough study of Wilber that Appellants' disclosed invention is not taught or suggested by Wilber. The only question is whether the claims are so broad that they read on Wilber.

Claims 16 and 37

Appellants argue (Br13) that Wilber, at the very least, contains no disclosure of "determining from said set of attribute values a selected value to be used as an attribute value standard" and "generating for said sequence of characters a set of normalized attribute values using said set of attribute values and said attribute value standard." As disclosed, the "attribute value standard" is the value corresponding to the location of the peak of the frequency distribution curve. Claim 16 does not recite how the standard is determined from the set of attribute values. As disclosed,

the "normalized attribute values" are the attribute values divided by the attribute value standard. Claim 16 does not recite how the normalized attribute values are computed, but it does require use of the attribute value standard in the normalization process.

The Examiner finds that "Wilber teaches 'producing first signals corresponding to the image of a character which may include a pattern to be identified' (col 3, lines 40-42), which is simply a step of selecting a feature, which may be expressed as a value (eg, [sic] height in pixels) to use as a standard, and standardizing means to generate normalized values for characters (col 3, lines 44-60)" (EA3). The Examiner previously found that Wilber teaches generating a standard dimensional value at column 3, lines 38-43, and normalizing characters at column 3, lines 44-54 (FR6-7).

The "means for producing first signals corresponding to the image of a character which may include a pattern to be identified" (col 3, lines 40-42) relied on by the Examiner is simply a scanner for producing a matrix of column and row elements representing the image of the character to be recognized. Claim 16 does not require scanning; the claimed

"sequence of characters to be recognized" may already be characters in memory. There is no calculation of any attribute values (e.g., the height, width, position, etc.) in the cited portion of Wilber, much less determining a selected value to be used as a standard from the set of calculated values. The scanned characters inherently have a height and width, but this is not the same thing as determining what they are.

The Examiner equates the step of "standardizing" in Wilber with the claimed step of "normalizing." Thus, the Examiner apparently reasons that because Wilber is normalizing the characters, it implicitly must be doing so in the same manner as claimed. The Examiner errs in his findings and assumptions.

Wilber states (col. 3, lines 55-60):

> The term "standardizing", as used herein, refers to the modification of signals by the performing of predetermined steps so that the signals correspond to a modified character. (The "modified" character may not necessarily be "recognizable" as such in the sense of having an appearance to that of the actual character.)

"Standardizing" may involve correction for "shear" using plural representations of the data with different shear distortions and a rule for testing the representations

(col. 20, lines 7-57); correction for "line tracking" to compensate for relative vertical displacement between adjacent characters (col. 23, lines 14-36); or correction for "skew" to compensate for the longitudinal direction of the row of elements of the sensor not being perpendicular to the longitudinal direction of the row of characters (col. 23, line 39, to col. 24, line 56). The purpose of these methods is to define a character independent of distortions to enable the identification of an unknown character (col. 23, lines 53-59). None of this "standardizing" involves "normalizing" in the sense of dividing by a reference quantity or modifying an attribute value using any quantity which might be deemed an "attribute value standard" determined from a "set of attribute values" to normalize attribute values. Although "standardizing" may involve expanding the image in the column and row direction until the image touches the borders of a matrix of determined dimension (col. 4, lines 17-21; col. 23, line 64, to col. 24, line 7), this is not done using an attribute value standard determined from a set of attribute values. Note that a period "after software modification [i.e., "standardizing"], will have a diameter extending from

the bottom to the top of the character space" (col. 24, lines 5-7), which is clearly not the same as normalizing the height according to a standard value.

The Examiner stated that "Wilber does teach that 'character attributes are normalized using an attribute value standard or the like' [at col. 3, line 66 to col. 4, line 3]" (FR3). Appellants note that this passage has nothing to do with generation or use of an attribute value standard for generating a set of normalized attribute values, but rather is describing a technique to compensate for shear (Br14-16). The Examiner responds that the argument is not persuasive since no histogram is claimed (EA3).

Appellants' response to the Examiner's assertion is correct. The histograms are used to determine orientation to correct for shear, not as frequency distributions to determine an attribute value standard to be utilized to normalize attribute values.

For these reasons, the Examiner erred in finding that Wilber teaches the steps of "determining from said set of attribute values a selected value to be used as an attribute value standard" and "generating for said sequence of

characters a set of normalized attribute values using said set of attribute values and said attribute value standard." The rejection of claims 16 and 37 is reversed.

Claims 1-15, 17-36, and 38-43

Claim 22 is the apparatus counterpart of method claim 1. Claim 1 is analyzed as representative.

Appellants argue (Br21) that Wilber, at the very least, fails to disclose or suggest the step of "generating a standard dimensional value determined from a frequency distribution of a selected one of said character dimensional characteristics" or the step of "generating . . . a set of normalized values determined from said standard dimensional value, said normalized values corresponding to said one or more character dimensional characteristics." Appellants agree with the Examiner's statement that "[i]t is extremely well-known to determine a most-commonly occurring value of a feature from a frequency distribution or histogram" (Paper No. 5, p. 4), but argue that the character recognition subject matter of claim 1 is not rendered obvious over this broad proposition.

The Examiner previously stated (Paper No. 5, p. 3):

> The statutory basis for the rejections of claims 1-6, 8-11, 22-27, 29-32 and 43 has been changed from §102(b) to §103 because although Wilbur et al is silent as to determining a standard from a frequency distribution, it would have been obvious to one of ordinary skill in the art to use this well-known method of determining a standard, as discussed below in the response to Applicant's arguments. Official Notice, MPEP 706.02 (a).

In the response to the arguments section, the Examiner stated (Paper No. 5, p. 4):

> [The claimed invention] looks at the range of values a particular feature lies on, determines a "standard" or most frequent value, then adjusts the other values to conform to the standard. Wilber does the same thing, but is silent as to determining a standard from a frequency distribution as in claim 1, for example. It is extremely well-known to determine a most-commonly occurring value of a feature from a frequency distribution or histogram.

The Examiner argues that "appellant has failed to demonstrate that anything of patentable novelty, other than the well-known steps of generating a histogram and finding the peak, is claimed" (EA4).[4]

Claim 1 recites more than the well-known step of determining a standard value from a frequency distribution:

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[4] Claim 1 uses the term "frequency distribution" rather than "histogram" and "standard dimensional value" rather than "peak." A "histogram" is a particular representation (using rectangles) of a frequency distribution. The "standard dimensional value" could be the value where the frequency distribution has a peak, but this is not claimed.

it recites application of this concept to determining a standard dimensional value from a frequency distribution of a character dimensional characteristic and it is this application which must be shown by the Examiner to have been obvious. Wilber does not generate a frequency distribution of a character dimensional characteristic or determine a standard dimensional value to be used for normalizing the character dimensional characteristics. As discussed in connection with similar limitations in claim 16, the "standardizing" in Wilber is not the same as the claimed "normalizing," as apparently assumed by the Examiner, because it does not use any quantity comparable to a "standard dimensional value determined from a frequency distribution of a selected one of said character dimensional characteristics" (the language in claim 16 was an "attribute value standard" determined from a "set of attribute values"). Thus, the Examiner fails to explain why it would have been obvious to apply the concept of determining a standard value from a frequency distribution to the character recognition method in Wilber.

For these reasons, we conclude that the Examiner has failed to establish a prima facie case of obviousness with

respect to the limitations of "generating a standard dimensional value determined from a frequency distribution of a selected one of said character dimensional characteristics" and "generating . . . a set of normalized values determined from said standard dimensional value, said normalized values corresponding to said one or more character dimensional characteristics." The rejection of claims 1-15, 17-36, and 38-42 is reversed. The Examiner finds that claim 43 is essentially equivalent to claim 17 with the addition of various steps (EA8). It is clear that claim 43 includes limitations corresponding to those on which the rejections of claims 1, 16, 22, and 37 were reversed, in particular, "generating normalized dimensional values . . . using said global maximum dimensional value." Accordingly, the rejection of claim 43 is reversed.

CONCLUSION

The rejections of claims 1-43 are reversed.

REVERSED

JERRY SMITH Administrative Patent Judge	)	
LEE E. BARRETT Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
PARSHOTAM S. LALL Administrative Patent Judge	)	

Terrance A. Meador
GRAY, CARY, WARE & FREIDENRICH
401 B Street, Suite 1700
San Diego, CA 92101